Ms. Xianping Li, an Assistant Professor in the Department of Mathematics and Statistics at the University of Missouri, Kansas City, will present on "Anisotropic Mesh Adaptation for Image Representation and Scaling." Ms. Li's research interests include numerical solutions for partial differential equations, finite element method, anisotropic mesh adaptation, and mathematical modeling and simulation in engineering.

Abstract: Triangular mesh has gained much interest in image representation and has been widely used in image processing. In this talk, a particular anisotropic mesh adaptation (AMA) method that has been successfully applied to solve PDEs will be introduced to image representation and image scaling. The AMA method is based on metric-specified mesh adaptation and finite element interpolation for Delaunay triangles. An initial triangular mesh is generated using the much fewer sample points than the original image pixels. The mesh is then adapted based on a computed metric tensor that controls the size, shape and orientation of the triangles in the mesh. Finally, the image is reconstructed from the mesh using finite element interpolation. This AMA method has clear mathematical framework and provides comparable results with other methods but with lower computational cost.

Biographical Sketch: Ms. Xianping Li obtained her Bachelor's and Master's degree in Petroleum Engineering from China University of Petroleum-Beijing, another Master's degree in Chemical & Petroleum Engineering from University of Kansas, and Ph.D. degree in Mathematics from University of Kansas. He has been a Visiting Assistant Professor at the University of Central Arkansas for two years before he joined the University of Missouri-Kansas City. He is currently an Assistant Professor in the Department of Mathematics and Statistics.

Dr. Li's research interests include numerical solutions for partial differential equations, finite element method, anisotropic mesh adaptation, and mathematical modeling and simulation in engineering. He is currently working on mesh adaptation for 3D anisotropic diffusion problems and application of mesh adaptation techniques in image processing.